

## 5. Engineer/Results\ 950 MW Operation.wpd

### 950 MW Operation

VAR support + converter station

What provisions need to be met for 2 units at  
950 MW gross

Maximum Steam flow limit - how do you control maximum steam flow limit of 6,900,000 lb/hr. Safety valves (main steam, drum, cold reheat and hot reheat) do not relieve until an overpressure condition, essentially we no longer have overpressure protection available.

Alarms: If we do have an excursion and it fit safeties, we will have ~~alarm~~ for exceeded our steam flow limit loss of FW Heater string Head limit

Suction Pressure Override

limit needs to be raised up

Limiting factor during test - unstable furnace suction pressure due to ID fan limit

Dustpress Baghouse - low differential pressure indication problem need to rescale transmitters (inlet and outlet duct pressure)

Range dropped below -15" w.c and -20" w.c., so DIP defaulted to 5" w.c (actual measured at 7.5" w.c.)

Strainers - BBFP

Vibration - BRPT U2 B - evaluate balancing turbini

Alarms <sup>16SI</sup> <sub>roadblock</sub> <sub>PI</sub> ID fans - evaluate high speed balancing

Station Instrumentation - temperatures

Main Steam & Hot Reheat temperatures are off 4 to 5 degrees min-max calibration offset to be applied to data acquisition system

limiting  
(maximum tube metal temperatures)

### Main Steam Sprays. ~~outlets~~

Evaluate changing main steam spray control were  
primary sprays will limit ~~maximum~~ tube metal temperature  
of secondary plenums as well as  
Secondary Superheat intermediate and outlet headers

~~if true~~

Generator - amp limits calc value

max flow block AQCS  
scrubber module rescale  
runback

## Equipment

### Turbine Operation

9.50

6.75

2350-

Sliding pressure - 2375 psi

No overpressure condition is allowed, would exceed maximum steam flow.

Booster Boiler feed pumps -

requires 3 pump operation (versus 2 pump)  
(low differential pressure alarm)

PA fans during this test which was abnormal

(6 pulv operation, PA inlet press at 47"wc)

Close to running out of PA damper position  
Before we can reduce PA flow and use high speed operation for bad coal

Reduce PA flow requirements - ~~PA~~

- 1) Reduce PA flow through Pulverizers (new target)
- 2) Recalibrate at burner lines versus PA inlet duct to Pulv
- 3) Rebalance burner lines with restrictors
- 4) Primary Air heaters - look at reducing seal leakage across primary air heaters at the minimum  
reduce seal clearances to OEM recommendations

→ max Amp limit

ID fan links - overcurrent alarms on numerous  
ID fan links

Auxiliary Power. 2A2 + 2B2, <sup>notes</sup> flux buses low → VAR measurement  
Voltage sagged to 6400 Volts  
→ 15MW aux limit (VAR limited)

Var measurement  
Temp instruments

## Boiler feed pump modification U2 B

Upgrade looks good, but still need to conduct performance test at specified conditions

### Question Validity

## Burners / NO<sub>x</sub> Requirements

Need to replace U2 burners due to pre-existing mechanical damage (Unit 1 burners have already been replaced).

Replacement needs to be with Unit 1 redesign or a better equivalent. Would highly recommend installing oversize air ports to give <sup>more</sup> operational flexibility to achieve lower NO<sub>x</sub> emission rates (0.40 lb/mmbtu?).

## Boiler Tubes - Additional Superheat Surface Area

During the performance test, we were able to achieve Main Steam and Reheat temperatures without a lot of problems.

We had a lot of reheat temperature and RH bias dampers were at minimum of 40%.

Due to the expense of additional primary superheat surface area and not a huge payoff of additional main steam temperature, we suggest looking at additional ~~flow~~ secondary superheat sootblowers as an alternative.

~~options~~ look at installation at below PRM

Generator - H<sub>2</sub> pressure controller went to bypass to get to 63

most critical SG is upper bank PS<sub>H</sub> restriction to Mipack lift restriction

Pulverizer - Rotating throats

Pulverizer - Pyrites Removal System

Cooling Tower - helper cooling towers will be added  
and tried in to the system during spring 2003

Circulating Water Pumps - CWP upgrade will take  
place to increase circulating water flow. Impellers  
of all 7 CWP will be changed out and pumps  
overhauled

Additional Testing

(ICS testing?  
NUARS 50 to 60  
limit 6900

HP Turbine Testing - 30 day test  
target date 5/7/02 YWS | 2385J 975 MW gross

Boiler Feed pump tests: U2 B  
target date 5/13/02

Air Heater leakage Tests for Sec Air Heater  
and Primary Air Heater  
target date 5/22/02